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Hong-Jik DOO

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For: PERSONAL THERMOTHERAPY INSTRUMENT

**SUBMISSION OF ENGLISH TRANSLATION OF KOREAN PRIORITY DOCUMENTS**

Assistant Commissioner for Patents  
Alexandria, VA 2231

Sir:

Applicant submits herewith a certified English translation of the following:

Korean Application No.: 2003-11732 filed on February 25, 2003;

Korean Application No.: 2003-14033 filed on March 6, 2003; and

Korean Application No.: 2003-32586 filed on May 22, 2003.

This paper is perfecting the priority.

It is respectfully requested that the applicant(s) be given the benefit of the filing date as evidenced by the certified papers attached hereto.

Respectfully submitted,

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(54) THERMAL THERAPEUTIC APPARATUS FOR INDIVIDUAL USE

[ABSTRACT]

A thermal therapeutic apparatus for individual use is disclosed. The apparatus is unfolded in use, and folded to be stored not in use. The apparatus includes coupling plates, receiving units, coupling links, subsidiary legs, noise

absorption pads, a hand jam prevention plate, a folding-resistant unit, and a locking bar, to allow a user to easily and safely undergo thermal treatment.

**[Representative Figure]**

Figure 3

**[Index words]**

thermal therapeutic apparatus for individual use

**[Description]**

**[Brief Description of the Drawings]**

Figure 1 is a separated perspective view illustrating a conventional thermal therapeutic apparatus for individual use;

Figure 2 is a front view illustrating a folded state of the conventional thermal therapeutic apparatus for individual use;

Figure 3 is a perspective view illustrating a thermal therapeutic apparatus for individual use according to the present invention;

Figure 4 is a separated perspective view illustrating a thermal therapeutic apparatus for individual use according to the present invention;

Figure 5 is a perspective view illustrating a foldable support for a thermal therapeutic apparatus for individual use according to the present invention;

Figure 6 is a perspective view illustrating a separated

primary part of a folding-resistant unit and a hand protecting plate of a thermal therapeutic apparatus according to the present invention;

Figure 7 is a perspective view illustrating a separated primary part of a foldable leg of a thermal therapeutic apparatus according to the present invention;

Figure 8 is a front view illustrating a thermal therapeutic apparatus for individual use according to the present invention; and

Figure 9 is a front view illustrating a folding state of a thermal therapeutic apparatus for individual use according to the present invention.

**(Figure numerals)**

10: thermal therapeutic apparatus  
20: foldable support  
100, 100a: coupling piece  
200: 200a: receiving unit  
300, 300a: coupling link  
400, 400a: subsidiary leg  
500: hand jam prevention plate  
600: folding-resistant unit  
700: locking bar  
800: noise absorption pad

**[Detailed Description of the Invention]**

**[Purpose of the Invention]**

### **[Field of the Invention and Prior Art]**

The present invention is related to a thermal therapeutic apparatus for individual use which is unfolded in use and folded to be store not in use, and, more particularly, to a thermal therapeutic apparatus for individual use to which an additional function is added, thereby allowing a user to easily and safely undergo thermal treatment.

Recently, as peoples are concerned about their health with rapid improvement of living standards, individual's thermal therapeutic apparatus is introduced to press, foment and adjust his/her backbone at comfort of their home. Also, there have been many studies that were performed for effective use of the thermal therapeutic apparatus.

The operation principle and configuration of the thermal therapeutic apparatus will be briefly described through an example. The thermal therapeutic apparatus is divided into an upper treatment mat and a lower treatment mat. The upper treatment mat supports the upper body of a user and the lower treatment mat supports the lower body of the user. The upper treatment mat and the lower treatment mat are organically coupled to each other, and embedded on a support.

The conventional thermal therapeutic apparatus configured as above pressures, foments, and adjusts a user's backbone. Although the conventional apparatus allows a user to undergo thermal treatment, since it was manufactured to focus on only an effective treatment for the backbone of the user, and integrally fixed to a support to form a fixed bed, it takes up a lot of space.

To resolve the above problems, the applicant of the present application has proposed a thermal therapeutic apparatus for individual use (Korean Patent Application No. 10-2003-0011732) that is unfolded in use and is folded to be store not in use.

The thermal therapeutic apparatus 1 for individual use is integrally coupled to the upper portion of the foldable support 2, as show in Figures 1 and 2. The thermal therapeutic apparatus 1 is unfolded when it is in use and folded to be stored when it is not in use.

The foldable support 2 includes a middle support 2 having a foldable unit 4, an upper support 5, and a lower support 6. The upper and lower supports 5 and 6 are coupled to the foldable unit 4 to be folded and unfolded as occasion demands, and have foldable legs 7 and 7a, respectively. Here, springs 8 and 8a are located between and located to the upper and lower supports 5 and 6, respectively.

On the other hand, although the conventional thermal therapeutic apparatus can be unfolded in use and unfolded not in use, as occasion demands, to maximize the utilization degree of a space, it does not have a hand jam prevention unit at the foldable unit 4. Therefore, when the user pushes the foldable unit, a user's hand can be jammed into the foldable unit and thereby injured. On the other hand, since the weight of the conventional thermal therapeutic apparatus and the user's weight are applied to the hinge of the foldable leg in an unfolded state when the user undergoes thermal treatment and such an operation is lasted for a long time, the foldable leg can be damaged, thereby shortening

the life span of the thermal therapeutic apparatus.

Additionally, since the conventional thermal therapeutic apparatus does not have a safety device to prevent the foldable support 2 in an unfolded state from folding when an external force is applied to the thermal therapeutic apparatus, it can be easily folded by tensions of the springs 8 and 8a. Also, the conventional apparatus makes a big noise when the foldable legs are folded.

The upper and lower treatment mats are coupled to the upper and lower supports 5 and 6 in a screwing manner through coupling holes of outer frames thereof, respectively, not using brackets. Therefore, a user must perform a difficult screwing work to assemble the thermal therapeutic apparatus. Additionally, the thermal therapeutic apparatus assembled by such a screwing work would not be sturdy.

#### **[Technical Subject of the Invention]**

Therefore, the present invention was created to resolve the problem with the conventional apparatus as described above and the object of the present invention is to provide a thermal therapeutic apparatus for individual use to which an additional function is added, which allows a user to easily and safely undergo thermal treatment.

#### **[Construction and Operation of the Invention]**

The foregoing object of the present invention may be achieved by providing a thermal therapeutic apparatus that is unfoldable in use, and foldable to be stored not in use, including

a coupling plate, a receiving unit, a coupling link, a subsidiary leg, a noise absorption pad, a hand jam prevention plate, a folding-resistant unit and a locking bar, thereby allowing a user to easily and safely undergo thermal treatment.

Preferred embodiment of the present invention will be described in detail with the accompanying drawings.

Figure 3 is a perspective view illustrating a thermal therapeutic apparatus for individual use according to the present invention. Figure 4 is a separated perspective view illustrating a thermal therapeutic apparatus for individual use according to the present invention. Figure 5 is a perspective view illustrating a foldable support for a thermal therapeutic apparatus for individual use according to the present invention. Figure 6 is a perspective view illustrating a separated primary part of a folding-resistant unit and a hand protecting plate of a thermal therapeutic apparatus according to the present invention. Figure 7 is a perspective view illustrating a separated primary part of a foldable leg of a thermal therapeutic apparatus according to the present invention. Figure 8 is a front view illustrating a thermal therapeutic apparatus for individual use according to the present invention. Figure 9 is a front view illustrating a folding state of a thermal therapeutic apparatus for individual use according to the present invention.

The thermal therapeutic apparatus 10 is integrally coupled to the upper portion of a foldable support 20 to be unfoldable in use and foldable not in use. The foldable support 20 includes a middle support 23 having a foldable unit 24, and lengthwise



frames 21 and 21a and outer frames 22 and 22a which are pivotally coupled to the foldable unit 24 to be unfolded or folded as occasion demands and has foldable legs 220 and 220a, respectively. The lengthwise frame 21 and the outer frame 22 are coupled to springs 25 and 25a, respectively.

Especially, as shown in Figures 3 to 9, the thermal therapeutic apparatus includes coupling plates 100 and 100a, receiving units 200 and 200a, coupling links 300 and 300a, subsidiary legs 400 and 400a, noise absorption pads 800 and 800a, a hand jam prevention plate 500, a folding-resistant 600 and a locking bar 700, to allow a user to safely and conveniently undergo thermal treatment.

The coupling plates 100 and 100a are installed at the inside the lengthwise frames 21 and 21a and outer frames 22 and 22a, which are formed on the upper portion of the foldable support 20. Fixing assembled bodies 11 and 11a and separating assembled bodies 12 and 12a are coupled to the coupling plates 100 and 100a, respectively.

As described above, the thermal therapeutic apparatus 10 is divided into the upper treatment mat and the lower treatment mat. The upper and the lower treatment mats includes the fixing assembled bodies 12 and 12a coupled to the lengthwise frames 21 and 21a, and the separating assembled bodies 11 and 11a coupled to the outer frames 22 and 22a, respectively.

The receiving units 200 and 200a are located both sides of the foldable support 20 and formed on the upper ends of the foldable legs 220 and 220a whose one ends are pivotally coupled thereto

using hinges 210 and 210a. When the foldable support 20 is unfolded, the lower ends of the outer frames 22 and 22a are closely coupled to the upper ends of the receiving units 200 and 200a to support the entire foldable support 20. Therefore, such a structure serves to prevent the weight of the apparatus from converging on the hinges 210 and 210a of the foldable legs 220 and 220a.

The coupling links 300 and 300a each having a certain length are coupled between the foldable legs 220 and 220a and predetermined parts of the middle support 23, respectively, to prevent the foldable legs 220 and 220a from splitting outwards when the thermal therapeutic apparatus 10 is used. To this end, one end of each of the coupling links 300 and 300a is pivotally coupled to each of the brackets 230 and 230a formed on the foldable legs 220 and 220a, and another end is coupled to the locking pin 310 protrudedly formed on the middle support 23.

Especially, the coupling links 300 and 300a have longitudinal holes 320 and 320a at their one end portions coupled to the coupled pin 310, such that they can move along the holes 320 and 320a when the thermal therapeutic apparatus is unfolded or folded. Namely, the longitudinal holes 320 and 320a allows the thermal therapeutic apparatus to smoothly perform their folding and unfolding operations.

The subsidiary legs 400 and 400a are formed at the middle portions of the lower parts of the foldable legs 220 and 220a, respectively, and faced towards the inside of thermal therapeutic apparatus. The subsidiary legs 400 and 400a are formed to be adjacently parallel to each other when the apparatus is folded.

The noise absorption pad 800 is formed on the side wall of the foldable legs to absorb noises generated when the foldable legs 220 and 220a are folded.

The hand jam prevention plate 500 is shaped as a plate and integrally attached to the outer portion of the foldable unit 24 at a certain height, such that a user's hand cannot be jammed into a space between the foldable unit 24 and the other elements when the thermal therapeutic apparatus 10 is unfolded.

The folding-resistant unit 600 is shaped as a letter 'U' to prevent the unfolded foldable support 20 from folding by tensions of the springs 25 and 25a, in which the foldable support 20 is inserted to the coupling holes 619 passing through the hand jam prevention plate 500, the foldable unit 24, and the outer frames 22 and 22a.

On the other hand, to prevent the folded thermal therapeutic apparatus from unfolding, a locking pin 710 is protrudely formed at one of the outer frames 22 and 22a, and a locking bar 700 is formed at the unselected one of the outer frames 22 and 22a, such that the locking bar 700 is pivotally rotated and locked by the locking pin 710.

To use the thermal therapeutic apparatus according to the present invention, the fining assembled bodies 12 and 12a are put on the lengthwise frames 21 and 21a and then fixed thereto in a screwing manner using the coupling plates 100 and 100a, respectively. After that, the separating assembled bodies 11 and 11a are put on the outer frames 22 and 22a and then fixed thereto in a screwing manner using the coupling plates 100 and 100a,

respectively. As the installation works are completed, the thermal therapeutic apparatus is integrally coupled to the foldable support 20.

In such a state, when the folding-resistant unit 600 passes through the hand jam prevention plate 500, the foldable unit 23, and the outer frames 22 and 22a, to be inserted into the coupling hole 610, the elements are tightly coupled to each other. Therefore, although an external force is applied to the thermal therapeutic apparatus or a user gets off the apparatus, the foldable support 20 would not be folded as long as the tensions of the springs 25 and 25a are applied thereto.

Thereafter, the thermal therapeutic apparatus 10 integrally coupled to the foldable support 20 is unfolded and operated based on an operation method like that of the conventional thermal therapeutic apparatus. Here, the foldable legs 220 and 220a are not split by the coupling links 300 and 300a and the subsidiary legs 400 and 400a, although the user lies on the thermal therapeutic apparatus.

To store the thermal therapeutic apparatus, the user separates the folding-resistant unit 600 from the coupling hole 610, and then grips the foldable support 20 to raise upward the middle support 23. Then, the upper and lower supports 26 and 27 are vertically upright, because their one ends are pivotally coupled to the foldable unit 23 of the middle support 23.

At this time, since the springs 25 and 25a pull the upper and lower supports 26 and 27, the upper and lower supports 26 and 27 can be easily folded at even a small force. When they are folded,

the foldable legs 220 and 220a make a noise but the noise absorption pad 800 absorbs the noise. Also, the coupling links 300 and 300a are moved upward along the longitudinal holes 320 and 320a such that the foldable support can be smoothly folded.

On the other hand, the subsidiary legs 400 and 400a are formed to be adjacently parallel to each other when the upper and lower supports 26 and 27 are folded. Once when the locking bar 700 is locked by the locking pin 710, the thermal therapeutic apparatus would not be unfolded by an external interference.

Additionally, since the foldable unit 24 is covered by a hand jam prevention plate 500 formed at a certain height therefrom, a user's hand, positioned on the foldable unit 24 to use the folded thermal therapeutic apparatus, can be protected from injury.

#### **[Effect of the Invention]**

As described above, according to the present invention, since the hand jam prevention unit is additionally installed to the foldable unit, the thermal therapeutic apparatus can prevent the hand of the user from jamming into the portion of the foldable unit when it is unfolded.

Also, since the outer frames are directly supported by the receiving units formed on the upper ends of the foldable legs, the foldable legs would not be easily damaged by the weights of the thermal therapeutic apparatus and the user.

Additionally, since the folding-resistant unit is inserted into the coupling hole, the unfolded foldable support is not abruptly folded, and a folding noise can be absorbed by the noise

absorption pad.

Furthermore, since the thermal therapeutic apparatus is coupled to the foldable support in a screwing manner through additionally installed brackets, the assembling works can be easily performed and the thermal therapeutic apparatus can be sturdily assembled.

It is to be understood that, the invention is never restricted to that embodiment and a variety of modifications and alterations which would be possible to a skilled man in the art by referring to the description or drawings presented here and within the spirit of the invention and thus those modifications or alterations are to fall within the scope of the invention, which the scope should be limited only by the attached claims.

**WHAT IS CLAIMED IS:**

1. A thermal therapeutic apparatus for individual use which is integrally coupled to a foldable support (20), unfolded in use, folded not in use, with respect to a foldable unit, and stored in a cover, wherein:

coupling plates (100, 100a) are formed at inner sides of lengthwise frames (21, 21a) and outer frames (22, 22a) which are formed on the upper portion of the foldable support (20) to which fixing assembled bodies (11, 11a) and separating assembled bodies (12, 12a) are coupled, respectively;

receiving units (200, 200a) are formed on the upper ends of foldable legs (220, 220a) which are located both sides of the foldable support (20) and whose one ends are pivotally coupled thereto using hinges (210, 210a), such that the lower ends of the outer frames (22, 22a) can be closely coupled to the upper ends of the receiving units (200, 200a) when the foldable support (20) is unfolded; and

coupling links (300, 300a) are formed between the foldable legs (220, 220a) and middle support (23) to prevent the foldable legs (220, 220a) from splitting when the thermal therapeutic apparatus is used.

2. The apparatus according to the present invention claim 1, wherein the coupling links (300, 300a) of a certain length, pivotally coupled its one end to brackets (230, 230a) formed at the foldable legs (220, 220a), and coupled its another end to a

coupling pin (310) protrudedly formed at the middle support (23), in which the another ends forms longitudinal holes (320, 320a).

3. The apparatus according to the present invention claim 1, wherein the foldable legs (220, 220a) have subsidiary legs (400, 400a) which are formed at lower middle portions thereof and curved to the inside of the apparatus, respectively, in which the subsidiary legs (400, 400a) are adjacently parallel to each other when the apparatus is folded.

4. The apparatus according to the present invention claim 1, wherein the foldable legs (220, 220a) form a noise absorption pad (80) on the side wall thereof.

5. The apparatus according to the present invention claim 1, wherein the foldable unit (24) of the foldable support (20) forms a hand jam prevention plate (500) at a certain height at the outer side thereof.

6. The apparatus according to the present invention claim 5, further including a coupling hole (610) passing through the hand jam prevention plate (500), the foldable unit (24) and outer frames (22, 22a), wherein the coupling hole (610) is inserted by a folding-resistant unit (600).

7. The apparatus according to the present invention claim 6, wherein a locking pin (710) is protrudedly formed at one ends



of the outer frames (22, 22a), and a locking bar (700) is formed at another ends of the outer frames (22, 22a), in which the locking bar (700) is rotated with respect to the hinge and locked by the locking pin (710), thereby preventing the folded apparatus from unfolding.

[Drawings]